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**BEFORE THE BOARD OF PATENT APPEALS
AND INTERFERENCES**

Application Number: 10/575,929

Filing Date: April 14, 2006

Appellant(s): SCHULTES ET AL.

Frederick D. Vastine
For Appellant

EXAMINER'S ANSWER

This is in response to the appeal brief filed 9/18/2009 appealing from the Office action mailed 2/12/2009.

(1) Real Party in Interest

A statement identifying by name the real party in interest is contained in the brief.

(2) Related Appeals and Interferences

The examiner is not aware of any related appeals, interferences, or judicial proceedings which will directly affect or be directly affected by or have a bearing on the Board's decision in the pending appeal.

(3) Status of Claims

The statement of the status of claims contained in the brief is correct.

(4) Status of Amendments After Final

The appellant's statement of the status of amendments after final rejection contained in the brief is correct.

(5) Summary of Claimed Subject Matter

The summary of claimed subject matter contained in the brief is correct.

(6) Grounds of Rejection to be Reviewed on Appeal

The appellant's statement of the grounds of rejection to be reviewed on appeal is substantially correct. The changes are as follows:

"Claims 24-37, 39, 42-46 stands properly rejected based on 35 USC 103(a) as obvious over Kress et al, U.S. Patent 4,895,898 in view of Lichtenstein et al, U.S. Patent 5,621,028" should read "Claims 24-25, 30, 32, 35, 37, 39 and 42-26 stands properly

rejected based on 35 USC 103(a) as obvious over Kress et al, U.S. Patent 4,895,898 in view of Lichtenstein et al, U.S. Patent 5,621,028."

"Claim 40 stands properly rejected based on 35 USC 103(a) as obvious over Kress et al, U.S. Patent 4,895,898 in view of Lichtenstein et al, U.S. Patent 5,621,028 further in view of Suetterlin et al, U.S. Patent 4,513,118" should read "Claim 40 stands properly rejected based on 35 USC 103(a) as obvious over Kress et al, U.S. Patent 4,895,898 in view of Lichtenstein et al, U.S. Patent 5,621,028 and Suetterlin et al, U.S. Patent 4,513,118, and further in view of NieSsner et al (US 2001/0007890 A1)."

(7) Claims Appendix

The copy of the appealed claims contained in the Appendix to the brief is correct.

(8) Evidence Relied Upon

4,895,898	Kress et al	01-1990
5,621,028	Lichtenstein et al	04-1997
5,252,667	Parker	10-1993
4,833,221	Albrecht	05-1989
4,513,118	Suetterlin et al	04-1985
2001/0007890	NieSsner et al	07-2001
EP 0691351	Rhein et al	01-1996

(9) Grounds of Rejection

The following ground(s) of rejection are applicable to the appealed claims:

Claims 24-26, 28-31, 33-40 and 42 are provisionally rejected on the ground of nonstatutory obviousness-type double patenting as being unpatentable over claims 1-3 and 6-12 of copending Application No. 11/813,946 in view of Lichtenstein et al (US 5, 621, 028). Although the conflicting claims are not identical, they are not patentably distinct from each other because both are directed to a polymer mixture comprising a low-molecular-weight (meth)acrylate (co)polymer; an impact modifier; and a relatively high-molecular weight (meth)acrylate (co)polymer.

Copending application No. 11/813,946 is silent with respect to plastic particles.

However, Lichtenstein et al teach polymethacrylate molded articles with polystyrene as light-scattering agent to render them translucent rather than transparent (column 1, lines 13-15). The polymer particles are spherical in shape having a diameter of 1-20 μ m and generally present in an amount of 0.05 to 10 wt% (column 3, lines 3-7). Therefore, it would have been obvious to add the crosslinked polystyrene of Lichtenstein et al, to the copending application for obtaining a translucent molded article.

This is a provisional obviousness-type double patenting rejection.

Claims 24-25, 30, 32, 35, 37, 39, and 42-46 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kress et al (US 4,895,898) in view of Lichtenstein et al (US 5, 621, 028).

Kress et al disclose a thermoplastic molding material containing (B) 10 to 60 parts by weight of one or more graft polymers which read on impact modifier of present

claims, (C) 10 to 70 parts by weight of a thermoplastic copolymer having an intrinsic viscosity of 20 to 110 ml/g and formed from (C.1) 50 to 95% by weight of styrene, methyl methacrylate or mixtures thereof and (C.2) 50 to 5% by weight of methyl methacrylate, maleic anhydride or mixtures thereof and (D) 0.5 to 7.5 parts by weight of a copolymer formed from (D.1) 0 to 90% by weight of styrene, methyl methacrylate or mixtures thereof and (D.2) 100 to 10% by weight of methyl methacrylate, maleic anhydride or mixtures thereof and component (D) has an intrinsic viscosity of 2 to 10 ml/g (column 1, lines 7-46). Components C and D read on the mixture of (meth)acrylate copolymers of claims 24 and 30. It is noted that viscosity is a function of molecular weight of the polymer and can be regulated with chain transfer agent and within the scope of a skilled artisan.

Kress et al also disclose that alkyl acrylate rubbers based on C₁-C₈ alkyl acrylates, in particular ethyl, butyl or ethylhexyl acrylate, are suitable as graft polymers. These alkyl rubbers can contain in the copolymerized form monomers such as methyl methacrylate. These alkyl acrylate rubbers can also contain minor amounts of ethylenically unsaturated monomers which have a crosslinking action (column 4, lines 53-65).

The mixtures may contain customary additives such as mould releasing agents (column 6, lines 46-47). The molding material can be used to produce shaped articles by injection molding. Examples of shaped articles for example include house hold equipment, components for automotive industry, computer casing and the molding material is also employed in the field of electrical engineering (column 7, lines 1-10)

Kress et al is silent with respect to plastics particles of claim 24, and properties of the composition in claims 24, 30 and 44-45.

However, Lichtenstein et al teach polymethacrylate molded articles with polystyrene as light-scattering agent to render them translucent rather than transparent (column 1, lines 13-15). The polymer particles are spherical in shape having a diameter of 1-20 μm and generally present in an amount of 0.05 to 10 wt% (column 3, lines 3-7). Therefore, in light of the teachings in Lichtenstein et al, it would have been obvious to add the light scattering agent, such as polystyrene, of Lichtenstein et al, to the molding material of Kress et al for obtaining a polymer mixture that can be molded into a translucent article.

As to the properties recited in claims 24, 30 and 44-45, in light of the fact that the composition comprises substantially similar monomers and wt% as that of the instant invention, one of ordinary skill in the art would have a reasonable basis to believe that the composition would exhibit similar properties. Since PTO cannot conduct experiments, the burden of proof is shifted to the applicants to establish an unobviousness difference. See *In re Best*, 562 F.2d 1252, 195 USPQ 430 (CCPA 1977). Furthermore, when the claimed compositions are not novel they are not rendered patentable by recitation of properties, whether or not these properties are shown or suggested in the prior art. See *In re Spada*, 911 F.2d 705, 709, 15 USPQ 1655, 1658 (Fed. Cir. 1990).

Claim 41 is rejected under 35 U.S.C. 103(a) as being unpatentable over Kress et al (US 4,895,898) in view of Lichtenstein et al (US 5, 621, 028) as applied to claim 24 above, and further in view of Parker (US 5, 252, 667).

The discussion with respect to Kress et al in view of Lichtenstein et al above is incorporated here by reference.

Kress et al in view of Lichtenstein et al are silent with respect to pelletized form of the moulding composition.

However, it is well known in the art of injection moulding to pre-extrude polymer blends to form pellets (column 8, lines 15-18) as taught by Parker. It is noted that a pellet is easier to transport and store as opposed to a powder or liquid. Therefore, it would have been obvious to one skilled in the art at the time invention was made to pre-extrude the polymer blends of Kress et al in view of Lichtenstein et al to form pellets, motivated by expectation of success and derive the ability to transport and store easily.

Claims 24-26, and 28-29 are rejected under 35 U.S.C. 103(a) as being unpatentable over Albrecht (US 4, 833, 221) in view of Suetterlin et al (US 4, 513, 118) and Lichtenstein et al (US 5, 621, 028).

Albrecht discloses a thermoplastic molding composition comprising 60 to 90 percent by weight of methyl methacrylate, from 5 to 25 percent by weight of at least one aromatic vinyl compound; and 2.5 to 15 percent by weight of maleic anhydride (column 1, lines 47-54). See table 1 wherein percent by weight of methyl methacrylate, styrene and maleic anhydride is 74%, 16% and 10% by weight respectively and the polymer has a Vicat softening point of at least 104°C.

Albrecht is silent with respect to impact modifier based on crosslinked poly(meth)acrylates, plastics particles based on polymethyl methacrylate, polystyrene or polysilicones and the properties associated with test specimen.

However, Suetterlin et al teach an emulsion polymer, said polymer being useful as an impact strength modifying agent which, in admixture with a thermoplastic molding compound yields molded articles exhibiting reduced susceptibility to stress whitening

and improved impact strength (abstract). The basic structure of polymers comprises a hard, nonelastomeric core, an elastomeric intermediate stage and a hard nonelastomeric final stage. The polymers of intermediate and final stage are disposed about the core in the manner of a shell (column 1, lines 14-19). The preferred field of use of the impact strength modifying agent is its admixture with molding composition comprising a copolymer of 50 to 99% by weight of methyl methacrylate and 1 to 50% by weight of other ethylenically unsaturated monomers. The amount of impact modifying agent is about 10 to 80 percent by weight (column 6, lines 27-40). Furthermore, Lichtenstein et al teach polymethacrylate molded articles with crosslinked polystyrene as light-scattering agent to render them translucent rather than transparent (column 1, lines 13-15). The polymer particles are spherical in shape having a diameter of 1-20 μm and generally present in an amount of 0.05 to 10 wt% (column 3, lines 3-7). Therefore, in light of the teachings in Suetterlin et al and Lichtenstein et al, it would have been obvious to add the impact modifier polymer of Suetterlin et al and crosslinked polystyrene of Lichtenstein et al, to the molding material of Albrecht et al, for above mentioned advantages.

Claims 33 and 36 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kress et al (US 4,895,898) in view of Lichtenstein et al (US 5, 621, 028) as applied to claims 32 and 35 above, and further in view of Albrecht (US 4, 833, 221).

The discussion with respect to Kress et al in view of Lichtenstein et al above is incorporated herein by reference.

Kress et al in view of Lichtenstein et al differ with respect to the copolymer.

However, Albrecht teaches a thermoplastic molding composition comprising 60 to 90 percent by weight of methyl methacrylate, from 5 to 25 percent by weight of at least one aromatic vinyl compound; and 2.5 to 15 percent by weight of maleic anhydride (column 1, lines 47-54). See table 1 wherein percent by weight of methyl methacrylate, styrene and maleic anhydride is 74%, 16% and 10% by weight respectively and the polymer has a Vicat softening point of at least 104°C and viscosity less than 55 ml/g in several examples. Molding compositions comprising these components are distinguished by a higher heat distortion point and a lower susceptibility to stress cracking than are polymethyl methacrylate molding compositions (column 1, lines 9-13). Therefore, in light of the teachings in Albrecht et al, it would have been obvious to use a copolymer of methyl methacrylate, styrene and maleic anhydride in the said weight percentages because Kress et al disclose a copolymer of methyl methacrylate, and maleic anhydride or styrene and Albrecht teaches that a copolymer of all three monomers in the said percentages results in a molding composition that has higher heat distortion point and a lower susceptibility and one of ordinary skill in the art would expect such a copolymer to work in the composition of Kress et al in view of Lichtenstein et al to yield a molding composition that has higher heat distortion point and a lower susceptibility.

Claims 34 and 38 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kress et al (US 4,895,898) in view of Lichtenstein et al (US 5, 621, 028) as applied to claim 30 above, and further in view of Suetterlin et al (US 4, 513, 118).

The discussion with respect to Kress et al in view of Lichtenstein et al above is incorporated herein by reference.

Kress et al in view of Lichtenstein et al differs with respect to the impact modifier having a two- or three shell structure; and the copolymerization of 95 to 99.5% by weight of methyl methacrylate with 0.5 to 5% by weight of methyl acrylate, ethyl acrylate and/or butyl acrylate.

However, Suetterlin et al teach an emulsion polymer, said polymer being useful as an impact strength modifying agent which, in admixture with a thermoplastic molding compound yields molded articles exhibiting reduced susceptibility to stress whitening and improved impact strength (abstract). The basic structure of polymers comprises a hard, nonelastomeric core, an elastomeric intermediate stage and a hard nonelastomeric final stage. The polymers of intermediate and final stage are disposed about the core in the manner of a shell (column 1, lines 14-19). The preferred field of use of the impact strength modifying agent is its admixture with molding composition comprising a copolymer of 50 to 99% by weight of methyl methacrylate and 1 to 50% by weight of other ethylenically unsaturated comonomers such as alkyl esters of acrylic acid having from 1 to 8 carbon atoms. The amount of impact modifying agent is about 10 to 80 percent by weight (column 6, lines 27-40). Therefore, in light of the teachings in Suetterlin et al, it would have been obvious to add the impact modifier of Suetterlin with a core-shell structure to the polymer mixture comprising a copolymer of methyl methacrylate and a comonomer in said amounts, because court held that it is *prima facie* obvious to combine two ingredients, each of which is targeted by the prior art to be useful for the same purpose. *In re Lindner* 457 F.2d 506,509, 173 USPQ 356, 359 (CCPA 1972).

Claim 40 is rejected under 35 U.S.C. 103(a) as being unpatentable over Kress et al (US 4,895,898) in view of Lichtenstein et al (US 5, 621, 028) and Suetterlin et al (US 4, 513, 118) as applied to claim 38 above, and further in view of NieSsner et al (US 2001/0007890 A1).

The discussion with respect to Kress et al in view of Lichtenstein et al and Suetterlin et al above is incorporated here by reference.

Kress et al in view of Lichtenstein et al and Suetterlin et al are silent with respect to the addition of mold release agents such as stearyl alcohol.

However, NieSsner et al teach the addition of additives such as lubricants and mold releasing agents (paragraph 0106) to molding compositions of styrene comprising comonomers such as methyl methacrylate, maleic anhydride (paragraph 0019 - 0024).

Examples of suitable lubricants and mold releasing agents are stearyl alcohol (paragraph 0107). Therefore, in light of the teachings in NieSsner et al, it would have been obvious to add lubricants and mold releasing agents such as stearyl alcohol to the composition of Kress et al in view of Lichtenstein et al and Suetterlin, because NieSsner et al has proven successfully the addition of lubricants and mould release agents such as stearyl alcohol to molding composition and one of ordinary skill in the art would expect the addition of lubricants and mould release agents such as stearyl alcohol to work for the molding composition of Kress et al in view of Lichtenstein et al and Suetterlin et al, motivated by expectation of success.

Claims 24, 26-27 and 47 are rejected under 35 U.S.C. 103(a) as being unpatentable over Rhein et al (EP 0 691 351 A1) in view of Suetterlin et al (US 4,513,118) and Lichtenstein et al (US 5, 621, 028).

Rhein et al disclose thermoplastic acrylic moulding material obtained by polymerizing a mixture of MMA (i.e. methyl methacrylate) and lower alkyl acrylate (i.e. the polymer reads on copolymer "a" of instant claims). It enables the production of PMMA (i.e. polymethyl methacrylate) based molding materials with improved properties, especially higher Vicat softening point (abstract). See example 1, wherein the Vicat softening temperature is 112⁰C.

Rhein et al is silent with respect to impact modifier based on crosslinked poly(meth)acrylates, plastics particles based on polymethyl methacrylate, polystyrene or polysilicones and the properties associated with test specimen.

However, Suetterlin et al teach an emulsion polymer, said polymer being useful as an impact strength modifying agent which, in admixture with a thermoplastic polymethyl methacrylate molding compound yields molded articles exhibiting reduced susceptibility to stress whitening and improved impact strength (abstract). Furthermore Lichtenstein et al teach polymethacrylate molded articles with polystyrene as light-scattering agent to render them translucent rather than transparent (column 1, lines 13-15). The polymer particles are spherical in shape having a diameter of 1-20 μ m and generally present in an amount of 0.05 to 10 wt% (column 3, lines 3-7). Therefore, it would have been obvious to add the impact modifier polymer of Suetterlin et al and crosslinked polystyrene of Lichtenstein et al, to the molding material of Rhein et al, for above mentioned advantages.

As to the properties recited, given that the composition comprises substantially similar components, one of ordinary skill in the art would have a reasonable basis to believe that the composition would exhibit similar properties. Since PTO cannot conduct experiments, the burden of proof is shifted to the applicants to establish an

unobviousness difference. See *In re Best*, 562 F.2d 1252, 195 USPQ 430 (CCPA 1977). Furthermore, when the claimed compositions are not novel they are not rendered patentable by recitation of properties, whether or not these properties are shown or suggested in the prior art. See *In re Spada*, 911 F. 2d 705, 709, 15 USPQ 1655, 1658 (Fed. Cir. 1990).

(10) Response to Argument

Appellant's argue that polymer mixture of copending claims is formulated of three different (meth)acrylate copolymers (a), (c) and (d) and a cross-linked poly(methacrylate) (b) as an impact modifier. In contrast, the matrix copolymer of the present composition is selected from one of four copolymer components (i), (ii), (iii) or (iv). Copolymer components (iii) and (iv) are based on (meth)acrylamide polymers, and therefore on this basis alone, one half of the scope of present claims is in no way obvious over the claims of copending case.

Contrary to applicant's assertion that one half of the scope of instant claims is not obvious over the copending case, it is noted that methacrylamide copolymer components (iii) and (iv) are alternative recitations for the polymer matrix (a) of instant claims and not required.

Appellant's argue that polymer components (i) and (ii) of the present claims, although (meth)acrylate based, are defined in terms of having a Vicat softening point of at least 104⁰C. On the other hand, the (meth)acrylate components (a), (c) and (d) of the

copending case are only characterized by their solution viscosity. The Vicat softening point in the copending case is that of the specimen and not the polymer matrix.

Firstly, the dependent claims (i.e. claims 30-38 and 40) in instant application require a mixture of (meth)acrylate copolymers as in the copending case and have viscosities that overlap. Secondly, Vicat softening point of the specimen in instant claims and copending case of at least 90⁰C and 110⁰C respectively, overlap substantially. Given that the Vicat softening point of specimen (i.e. moulded specimen formed from polymer mixture) would be dependent upon the nature of polymer mixture comprising polymer matrix, it is the examiner's position that Vicat softening point of the polymer matrix of instant and copending claims would overlap substantially, absent evidence to the contrary.

Appellant's argue that claims of copending application do not contain the set of properties recited in instant claims (i.e. roughness value, glass and Vicat softening point).

As stated above, Vicat softening point of the specimen in instant (i.e. at least 90⁰C) and copending claims (i.e. at least 110⁰C) overlap substantially. In addition, when the claimed compositions are not novel they are not rendered unobvious by recitation of properties, whether or not these properties are shown or suggested. Since PTO cannot conduct experiments, the burden of proof is shifted to the applicants to establish an unobviousness difference.

Appellant's argue that basic component of the molding composition of Kress et al is a matrix thermoplastic polycarbonate material (A) in 20 to 80 parts by weight and not (meth)acrylate/(meth)acrylamide as instantly claimed. There is no disclosure in Kress et al of a matrix polymer material other than the polycarbonates described. The closed language of "consisting essentially of" excludes a major component such as polycarbonate.

Appellant's attention is drawn to Kress et al (col. 1, lines 24-49), wherein it is shown that the moulding material comprises 10 to 70 parts by weight of thermoplastic polymer (C) and 0.5 to 7.5 parts by weight of copolymer (D) both of which are formed from monomers such as methyl methacrylate, styrene and maleic anhydride as in instant claims. In addition, viscosities of these copolymers overlap with the viscosities in instant claims. Hence, it is clear that Kress et al teach the polymer mixture comprising (meth)acrylate copolymer of instant claims.

Furthermore, as stated earlier, while polymer matrix uses "consisting essentially of" language, polymer mixture of instant claims is open-ended because of the transitional phrase "polymer mixture comprising". Hence, it is the examiner's position that instant claims are open to the presence of polycarbonate in Kress et al. In addition, while use of transitional phrase "consisting essentially of" narrows scope of the polymer matrix to the specified materials and those which do not materially affect the basic and novel characteristics of the claimed invention, absent a clear indication of what the basic and novel characteristics are, "consisting essentially of" is construed as equivalent to "comprising". Further, the burden is on the applicant to show that the additional ingredients in the prior art, i.e. polycarbonate, would in fact be excluded from the claims

and that such ingredients would materially change the characteristics of the applicant's invention, See MPEP § 2111.03.

Appellant's argue that component (B) is a rubbery material formed by graft polymerizing a mixture of ethylenically unsaturated monomers that include methyl methacrylate, onto a rubber. The impact modifier of present claims is a crosslinked poly(meth)acrylate which is not covalently bonded to the (meth)acrylate / (meth)acrylamide polymer matrix.

Appellant's attention is drawn to Kress et al (column 4, lines 53-65) wherein it states - alkyl acrylate rubbers based on C₁-C₈ alkyl acrylates, in particular ethyl, butyl or ethylhexyl acrylate, are suitable as graft polymers (i.e. impact modifiers of instant claims). These alkyl rubbers can contain in the copolymerized form monomers such as methyl methacrylate. These alkyl acrylate rubbers can also contain minor amounts of ethylenically unsaturated monomers which have a crosslinking action. Hence, it is clear that the graft polymer of Kress et al is a copolymer based on methyl methacrylate and is crosslinked without being covalently bound to the matrix polymer and meets the limitation of component (b) of instant claims.

Appellant's argue that Albrecht does not teach or suggest the presence of an impact modifying agent in a polymethyl methacrylate molding material. The core-shell polymer of Suetterlin et al is meant primarily for admixture with a hard and brittle synthetic resin based on polymethyl methacrylate for improving strength characteristics.

In response, applicant's attention is drawn to Suetterlin et al, wherein it states - preferred field of use of the impact strength modifying agent is its admixture with molding composition comprising a copolymer of 50 to 99% by weight of methyl methacrylate and 1 to 50% by weight of other ethylenically unsaturated monomers. Hence, it is the examiner's position that Suetterlin provides the motivation (i.e. molded articles exhibit reduced susceptibility to stress whitening and improved impact strength) to add core-shell polymer (i.e. impact modifier) to the copolymer of Albrecht et al based on methyl methacrylate.

Appellant's argue that Rhein et al provides no teaching of mixing one of the four specific types of copolymer mixtures (i) to (iv) with a certain cross-linked (meth)acrylate copolymer which is not covalently bonded to the polymer matrix as an impact modifier, and plastic particles formed of polymethyl methacrylate, a polystyrene and/or polysilicone.

In response, it is noted that rejection is based on the disclosure of Rhein et al combined with the teachings in Suetterlin et al and Lichtenstein et al. Motivation to add core-shell polymer (i.e. impact modifier) and polystyrene particles, to the composition of Rhein et al, is provided by Suetterlin et al and Lichtenstein et al, respectively.

(11) Related Proceeding(s) Appendix

No decision rendered by a court or the Board is identified by the examiner in the Related Appeals and Interferences section of this examiner's answer.

For the above reasons, it is believed that the rejections should be sustained.

Respectfully submitted,

/Karuna P Reddy/
Examiner, Art Unit 1796

/Vasu Jagannathan/
Supervisory Patent Examiner, Art Unit 1796

Conferees:

/Vasu Jagannathan/
Supervisory Patent Examiner, Art Unit 1796

/Benjamin L. Utech/
Primary Examiner